



GEER Status Update

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Glenn Extreme Environment Rig (GEER)

GEER simulates atmospheres

Current capability

- Temperature: ambient to 500 degree C
 - Virtually any chemistry – accurately
- Pressure: .001 to 100 bar
Indefinite duration

Science, technology and/or mission applications

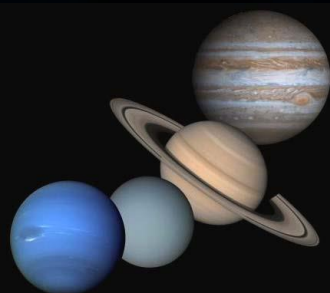
Venus (environment and chemistry – surface to above clouds)



Venus Flagship STDT Report



Saturn, Jupiter, Uranus, moons (chemistry and temp / pressure within rig limits)



NRC 2013 Planetary Decadal Survey



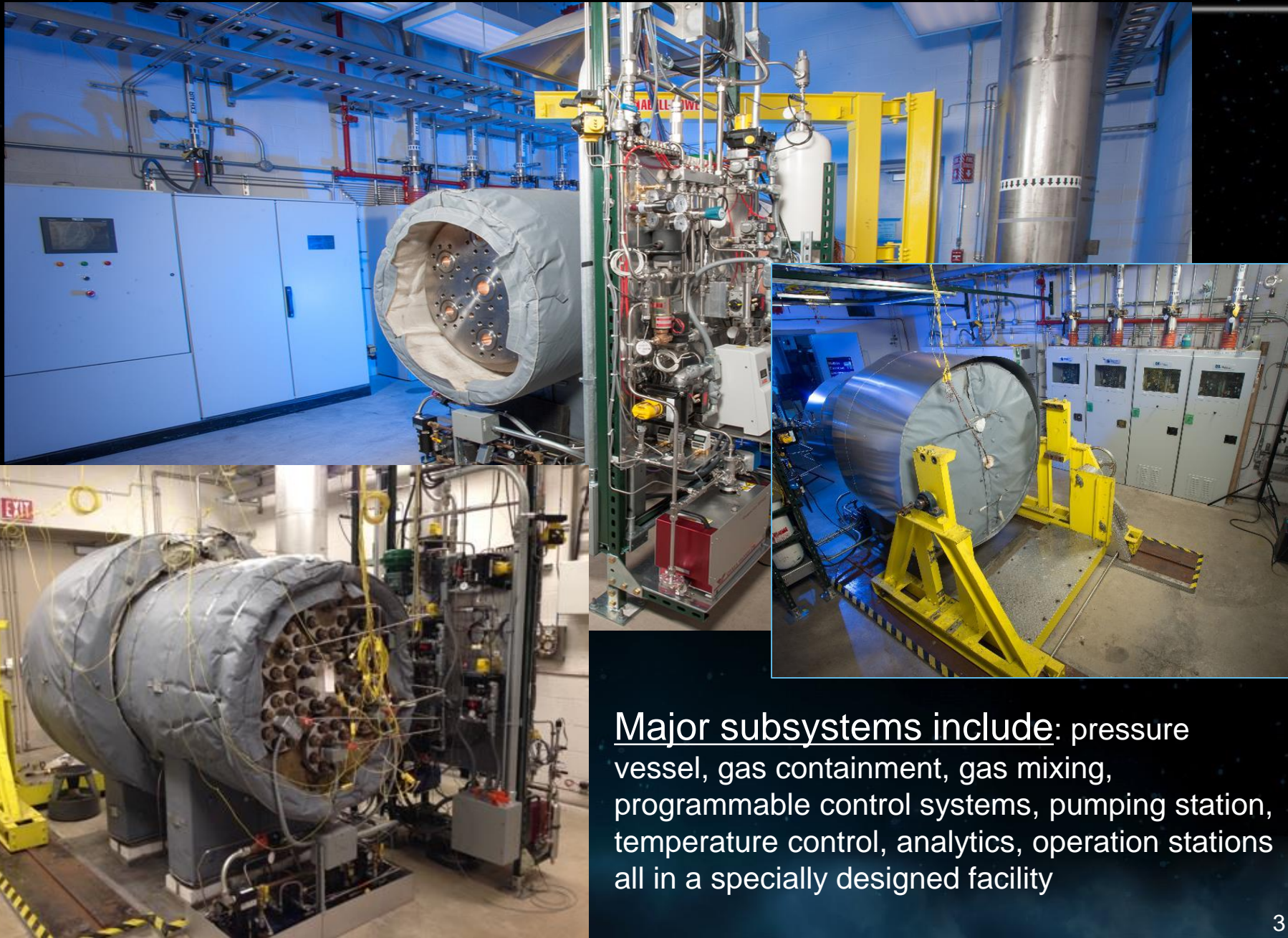
Exoplanets – Chemistry for science and model inputs



***Super-Earth exoplanet GJ 1214b
(Image from ESA VLT)***

Direct applications for science, instrument and technology development, and mission support (like Venera-D)

GEER Basics



Major subsystems include: pressure vessel, gas containment, gas mixing, programmable control systems, pumping station, temperature control, analytics, operation stations all in a specially designed facility

Latest Status

- GEER is operating well and busy implementing science experiments and technology development tests
 - Currently 2/3 through 60 day test - several “customers” in vessel
- Preparing to hook up smaller mini-GEERs that utilize complex chemistry generation system and local analytics
 - Feedback from Science Advisory panel
 - Allows for: parallel tests, quicker turn around, less consumables and wear on GEER when the larger volume not needed



New Insulation

Glenn Extreme Environment Rig (GEER)

GEER available for users

- One of the potential US contributions to Venera-D is to provide test assistance, if desired
- If such interest exists to use GEER – let JSDT know to discuss needs
- **Website: <https://geer.nasa.gov>**

